



# Lake Michigan Salmon Stocking

## Frequently Asked Questions

Michigan Department of Natural Resources, Fisheries Division

*Developed: March 2014*

### 1. How are fisheries management decisions made for the Great Lakes?

Individual state or provincial agencies are responsible for managing fisheries within their state boundaries and each jurisdiction has their own decision making process. However, all states and provinces that border a Great Lake are signatory to the [Joint Strategic Plan for Management of Great Lakes Fisheries](#) and have collaboratively developed [Fish Community Objectives](#) for each of the Great Lakes through their individual Lake Committees.

Management agencies work together through the Lake Committee process to assure that Great Lake management actions are communicated and discussed among the state and provincial jurisdictions. The [Lake Michigan Committee](#) (LMC) has the following members on it: one representative from Michigan, Wisconsin, Illinois, and Indiana, and one representative from the Chippewa-Ottawa Resource Authority.

### 2. How were the 2013 Chinook salmon stocking cuts determined?

The LMC, comprised of state and tribal natural resource agencies in the Lake Michigan basin, facilitated a structured decision making process that involved input and expertise from diverse stakeholders, pertinent scientific information and modeling, and a comprehensive evaluation component to discuss and determine a stocking management and evaluation plan.

- A core stakeholder group consisting of angling group representatives from Illinois, Indiana, Wisconsin and Michigan was formed in 2011 to provide the LMC with lakewide stakeholder goals and objectives and stocking options based on historic and current survey information and population level modeling efforts.
- The LMC and stakeholder group reviewed 26 stocking options to meet stakeholder and agency lake-wide goals. Based on their input, the LMC recommended further review of 4 stocking options in 2012.
- These options were reviewed by the Lake Michigan Citizen Fishery Advisory Committee and the general public.
- Based on the input received, the LMC decided to reduce Chinook salmon stocking lake-wide by 50% and adopt a feedback policy whereby future stocking changes, increase or decrease, are influenced strongly by a biological index of predator-prey levels. Until such time that the LMC can develop a comprehensive predator-prey index to be used as the feedback policy, the LMC will use a three year average weight of age-3 female Chinook salmon returning to the Strawberry Creek weir in Wisconsin from 2013-2015. If the three year average weight of an age-3 female Chinook salmon is below 7kg (15.4 lbs) then addition reductions in stocking should be considered and if it is above 9kg (19.8 lbs) then an increase in stocking should be considered. Stocking numbers would remain if the three year average weight is between 7 and 9kg.

### 3. Chinook salmon stocking was cut by 50% lakewide (67% in Michigan waters) in 2013. Will further Chinook salmon stocking cuts take place in 2014?

Lake Michigan Chinook salmon stocking levels will remain the same as in 2013, meaning no further cuts will take place in 2014.

**4. Why did Michigan take a larger cut percentage-wise than other states?**

The reason for this is because many Michigan rivers produce lots of wild, naturally reproduced Chinook salmon and have large runs based entirely on natural reproduction. There is very little Chinook salmon natural reproduction in the rivers of other states bordering Lake Michigan.

**5. There seemed to be fewer, but larger, Chinook salmon in Lake Michigan in 2013. Did the 2013 stocking cuts cause this?**

No, most of the Chinook caught by anglers in 2013 were age-3 fish from the 2010 year class. Fish stocked in 2013 will begin to be caught by anglers in 2014 as age-1 fish. The reason anglers observed fewer, but larger fish is based on the survival of Chinook salmon year classes as a result of the alewife year class production in the same year. In 2010, there was a large year class of alewife produced which increased Chinook salmon survival and numbers for that year class substantially. In 2011, however, the alewife production was very low resulting in a low number of 2011 salmon and still a high number of 2010 (age-1 Chinook). This pattern played out in 2012 with a record high number of age-2 Chinook salmon in the fishery, but not huge in size. In 2013, the remaining Chinook salmon from the 2010 year class (e.g., the fish that didn't mature and die in 2011 or 2012) had an abundant supply of food and little competition from other salmon year classes resulting in lower catch rates but really big fish. Poor weather and lake conditions also contributed to the lower Chinook salmon catch of 2013. It is also important to note that even though returns were down, they were not at historical lows.

**6. What was the weight of age-3 female Chinook salmon in 2013?**

The 2013 female weight at age-3 Chinook salmon from the Strawberry Creek Weir in Wisconsin was 8.74 kg (19.27 lbs).

**7. There seems to be a lot of forage in the lake right now, and most Chinook salmon appear large and healthy. If the Chinook salmon have enough to eat and are growing well, shouldn't we consider increased stocking rates?**

One of the driving forces contributing to the short and long term sustainability of the Chinook salmon fishery is a balanced predator prey relationship. We know Chinook salmon feed primarily on alewives. We also know that in a healthy alewife population, we would expect to see a large number of age classes. Building on the explanation in #5 above, we estimate the 2012 alewife year class was slightly above average and that the 2013 alewife year class was well below average. Therefore, we are expecting catch rates to increase in 2014 (not as much as in 2012) because the 2012 Chinook salmon year class will recruit to the fishery. However, we also expect catch rates to decline in 2015, possibly lower than 2013, and size to increase (again, not as large as in 2013).

In 2007 management agencies observed nine different alewife age-classes in the lake, while in 2012 only four age-classes were observed and the vast majority of them were young fish (age 2 and age 0). Fewer age classes and large alewives were also observed prior to the alewife collapse, and subsequent Chinook salmon collapse in Lake Huron. Additional stocking of Chinook salmon in Lake Michigan would increase predator prey unbalance and risk a potential fishery collapse at this time.

**8. What are the results of the 2013 prey fish trawl and acoustic surveys used to detect alewives?**

Preliminary acoustic survey results suggest that the 2013 alewife year class was low in abundance and the length of these young-of-the-year fish was relatively low (<2.4 in). Based on the low abundance and small size, survival of the 2013 alewife year class to age-1 will likely be low. The alewife population in Lake Michigan is now made up almost entirely of just two year classes – 2010 and 2012.

**9. I mark a lot of baitfish on my fish finder/graph, so why are all the surveys saying there are not many baitfish in the lake?**

The surveys are a comprehensive assessment of the prey fish community using consistent techniques applied at representative locations throughout the entire lake. Anglers typically target a relatively small area of Lake Michigan, whereas surveys conducted by natural resource agencies target representative locations throughout the lake to get a statistically valid depiction of the entire prey fish community. While we certainly have alewives in Lake Michigan, we also have enough warning signs that their population may be in decline or unstable; thus leading to concerns about the long-term sustainability of the Chinook salmon fishery.

**10. Were surveys conducted to detect alewives in the Upper Peninsula waters of Lake Michigan?**

Prey fish populations (including alewives) are assessed using both trawl and acoustic sampling methods through collaborative efforts of the US Geological Survey Great Lakes Science Center, the US Fish and Wildlife Service, and the Michigan Department of Natural Resources. Bottom trawl surveys in Lake Michigan have been conducted during the fall annually since 1973. Seven transect sites have been consistently surveyed annually, including a Manistique area site.

**11. Why can't we stock alewives to increase their abundance?**

Stocking alewives is logistically and economically unfeasible due to the number of fish needed to stock to have any impact in a water body the size of Lake Michigan.

**12. What is our current stocking strategy meant to accomplish?**

The current stocking strategy is meant to maintain a sustainable predator prey balance by maintaining both Chinook salmon and alewives.

**13. How many wild Chinook salmon are in Lake Michigan?**

Recent studies show that more than 50% of the Chinook salmon in Lake Michigan are of wild origin and in some years it may run as high as 66%. The majority of wild Chinook salmon in Lake Michigan are produced in Michigan streams.

**14. How are Chinook salmon numbers estimated?**

Chinook salmon numbers are estimated by combining angler catch rates, weir returns, and biological data in a lakewide stock assessment model. The model includes inputs for both the number of salmon stocked and the number of wild salmon produced (estimated independently via marking studies such as OTC and coded wire tag mass-marking). Based on the number of salmon inputted into the model, estimates of growth, maturation, and survival are produced to track the number of salmon over time.

**15. How does Michigan DNR make Chinook salmon stocking decisions? Is it possible to stock more Chinook salmon in different locations?**

Locations and fish stocking numbers for 2013 were determined after much discussion and consideration among Michigan DNR Fisheries Division staff and stakeholders. A number of different criteria were used in the discussion, including catch, angler use, net pen vs. direct stocking, and economic interests. Stocking changes are possible, as long as the guidelines are followed for maintaining the predator prey balance. Stakeholders should continue to work with their local Fisheries Division staff to discuss opportunities for changes. For example: if natural reproduction from northern lower Michigan continues to support the fishery and provides adequate adult returns to the Little Manistee Weir (primary egg take facility), there may be an opportunity to move more stocking to the Upper Peninsula and southern Michigan ports that have less natural reproduction.

In addition, mass-marking data will provide a substantial amount of information on the return rates for our stocking sites. Based on this information and angler feedback, we will likely refine our stocking allocations over time.

**16. Because we caught fewer Chinook salmon in 2013, is there a chance we will be returning to a three salmon per day catch limit in 2014?**

The current protocol to determine the salmon bag limit was developed collaboratively between stakeholders and DNR Fisheries Division. The protocol identifies benchmarks for the percent of charter anglers catching three or more Chinook salmon per day (13.1%) and the catch rate (fish per hour) of Chinook salmon (0.165). If the estimated values for the success of charter anglers or catch rates drop below both benchmarks in any given year, then the bag limit for Chinook and coho salmon will be decreased to three. If the estimated values for the success of charter anglers and the catch rate are both above their respective benchmarks, then the daily bag limit for Chinook and coho salmon will be set at five fish per angler per day. If one of the estimators is above its benchmark while the other is below its benchmark, then there is no modification to the daily bag limit for Chinook and coho salmon from what it was in the previous year.

The 2013 estimate of charter anglers catching more than three Chinook salmon was 2.9%. The 2013 catch rate estimate was 0.226 fish per hour. Therefore, since only one metric fell below the threshold, our protocol indicates that we will not adjust the bag limit (stay at five) for 2014.

*If you have any questions about the FAQs or salmon stocking program please contact:*

*Todd Kalish  
Michigan Department of Natural Resources  
Lake Michigan Basin Coordinator  
970 Emerson Road  
Traverse City, MI 49696  
231-922-5280  
[kalisht@michigan.gov](mailto:kalisht@michigan.gov)*